



PROMOTING DOMESTIC GAS SUPPLY THROUGH COMMON-USE INFRASTRUCTURE

2 April 2008

SUMMARY

- The DomGas Alliance supports measures to increase supply, to reduce costs and to increase competition in the domestic gas market.
- One means of achieving this is by promoting the development of common-use gas supply infrastructure.
- The Alliance engaged energy consulting firm Wood McKenzie to assess the potential benefits of common-use mid-stream gas gathering and processing infrastructure to gas suppliers and end users.
- The Report found significant benefits in developing common-use mid-stream infrastructure. These benefits include:
 - lower barriers to entry for gas suppliers leading to increased competition;
 - a more economically efficient use of capital leading to lower gas supply chain costs; and
 - increased transparency in the costs of supply.
- Two development scenarios in the Carnarvon Basin were examined:
 - three independent developments with their own gas gathering and processing facilities; and
 - one integrated development with common-use infrastructure.
- Wood Mackenzie concluded that common-use infrastructure could reduce capital costs by almost half – with potential savings as high as \$1 billion.

- An analysis of gas fields in the Carnarvon Basin found multiple opportunities for integrated development through shared infrastructure.
- Three international case studies of alternative approaches were also examined by the Report - Norway, United Kingdom and the United States Gulf of Mexico
- Wood Mackenzie concluded that the Norwegian experience had been the most successful in terms of the development and success of common-use mid-stream gas supply infrastructure. Key characteristics include:
 - common-use infrastructure owned by a combination of state and gas supplier joint ventures;
 - the infrastructure is regulated and operated on open access principles;
 - the gas supply market is highly competitive with joint venture partners marketing independently; and
 - the terms of access to mid-stream processing and transmission of gas supply is transparent to suppliers and users.
- The Alliance supports the promotion of common-use mid-stream infrastructure to facilitate gas field development provided that any such consolidation of gas field development delivers increased supply to the domestic market.

BACKGROUND

The DomGas Alliance supports measures to increase supply, to reduce costs and to increase competition in the domestic gas market. One means of achieving this is by promoting the development of common-use gas supply infrastructure.

The Alliance engaged energy consulting firm Wood McKenzie to assess the potential benefits of common-use mid-stream gas gathering and processing infrastructure, to gas suppliers and end users.

Current condition

Currently, midstream gas gathering and processing facilities are scaled and built to support individual projects. This has the potential to lead to sub-optimal development with little integration. The likely end result is to increase project costs and make development of some gas fields uneconomic.

A significant component of the total costs of a new offshore development is the cost of midstream gas gathering pipelines – which rise the further gas fields are located from shore - and the associated gas processing facilities.

Shared-use infrastructure could cut project costs by almost half

The Report examined two development scenarios involving the development of gas fields in the Carnarvon Basin with a typical distance of 150 km to shore.

Scenario One: three independent 100 terrajoules / day (TJ/d) developments, each with separate pipelines and processing facilities

Scenario Two: one integrated development utilising one common gathering trunkline and a processing plant of 300 TJ/d capacity

The Report found that by consolidating developments into an integrated development with common-use facilities, capital costs could be reduced by almost half. This could deliver potential savings as high as \$1 billion.

	Scenario One Integrated System Capex (\$m) 300 TJ/d	Scenario Two Stand Alone Capex (\$m) 100 TJ/d x 3 fields	Timing
Pipeline to Shore Costs			
Field A – Initial 100 TJ/d	\$555 (150 km x 20")	\$445 (150 km x 16")	Year 1
Field B – Subsequent 100 TJ/d	\$111 (50 km x 12")	\$445 (150 km x 16")	Year 3
Field C – Subsequent 100 TJ/d	\$111 (50 km x 12")	\$445 (150 km x 16")	Year 5
Gas Processing Costs			
300 TJ/d Plant	\$400	\$250 x 3	Year 1
100 TJ/d Plant			Years 1, 3, 5
Total Capex	\$1, 177	\$2,085	

There are numerous integration opportunities in the Carnarvon Basin

The Report identified the following fields which are likely to be looking primarily at the domestic gas market:

- Reindeer, Caribou, Gnu
- Julimar / Brunello
- West Tryal Rocks
- Maitland
- Spar
- Macedon

Wood Mackenzie acknowledged that Apache Energy's Varanus Island and proposed Devil's Creek project demonstrate good use of common hub facilities. They commented, however, that the Varanus Island facility is currently at near capacity, but could accommodate additional gas post-2014 as John Brookes production starts to decline.

Wood Mackenzie concluded that the following integration opportunities do exist in the Carnarvon Basin:

- Reindeer, Caribou, Gnu and Corvus – planned for development through the proposed Devil's Creek processing plant
- Julimar area, Maitland area and Spar provide the basis for a potential gathering and processing hub (possibly in conjunction with the Devil's Creek development)
- Fields such as Macedon and West Tryal Rocks with high levels of inerts do present difficulties for shared infrastructure, although these are not insurmountable

Wood Mackenzie identified a number of large gas fields with the potential to support stand-alone LNG developments:

- Pluto, Xena
- Greater Gorgon
- Wheatstone, Iago
- Scarborough

In their view the LNG focus and scale made integration unlikely, although they acknowledged that integration of domgas and LNG would likely provide some synergies – particularly in view of domestic gas reservation commitments.

Gas development prospects	Potential for integration
Reindeer / Caribou / Gnu / Corvus Macedon, West Tryal Rocks Julimar area, Maitland area, Spar Pluto, Greater Gorgon Wheatstone / Iago, Scarborough	Plans for Devils Creek processing plant Gas quality issues need to be managed Potential gathering and processing hub LNG projects with DomGas commitments Potential stand-alone large gas dvpments

Experience in other markets

Three case studies in international markets were examined by the Report - Norway, United Kingdom and the United States Gulf of Mexico

Wood Mackenzie concluded that third party access to mid-stream infrastructure has resulted in greater gas connectivity and gas flow.

Norway

Norway proved to be the most successful in terms of the development and success of common-use mid-stream gas supply infrastructure. Norway's situation is comparable with WA in that gas must in most instances first come to shore to be processed and then be transported to markets which are typically a long distance away.

Key characteristics of Norway include:

- common-use infrastructure owned by a combination of state and gas supplier joint ventures;
- the infrastructure is regulated and operated on open access principles;
- the gas supply market is highly competitive with joint venture partners required to market independently; and
- the terms of access to mid-stream processing and transmission of gas supply is transparent to suppliers and users.

United Kingdom

In Wood Mackenzie's view the structure which exists in the United Kingdom is less than ideal. In both the United States and the United Kingdom, mid-stream gas infrastructure evolved mainly with arms length negotiations and arrangements are as a result not fully transparent.

Key characteristics of the United Kingdom arrangements include:

- access to infrastructure is not regulated by government bodies and is instead by negotiation between counter parties;
- pipelines have been built as independent systems and gas cannot move between alternative terminals – this reduces security of supply since if one pipe or terminal becomes inoperable, there is no other route to the market for the associated gas;
- security of supply continues to grow as an issue – as the United Kingdom moves from being a net exporter to a net importer; and
- a new Infrastructure Code of Practice will help improve access for new suppliers by providing access to historical and current terms and conditions.

United States

Wood Mackenzie advises that the United States Gulf of Mexico (GOM) midstream sector comprises 23,000 km of off-shore gas pipelines, connecting over 45,000 wells. Capacity of the offshore GOM system is currently 20 bcfd, however, it currently averages only around 9 bcfd.

Key characteristics:

- the United States GOM midstream sector evolved under differing levels of regulation – initially regulated and evolving into completely private owned systems;
- it has evolved into a broadly interconnected system with significant surplus capacity to current gas flows;
- to achieve higher utilization, GOM producers have now made efforts to bring greater transparency into their systems; and
- these efforts have aided connectivity and gas flow in a mature gas basin which would otherwise be facing declining flows on lower utilization of existing infrastructure.

	Norway	United Kingdom	United States Gulf of Mexico
Owners of Midstream Assets	Gassled owns assets JVs by assets mostly producers	Private ownership JVs of mostly producers	Private ownership Producers, pipeline companies, independents
Key Drivers for Development	Exports UK and Europe (98%) Gas to shore, processed, then exported. Zonal system	DomGas (94%) Some exports (6%)	Abundant on-shore industry Unregulated gas price
Regulation of Mid-stream	Gassled regulated by Minister of Petroleum & Energy Open Access Terms	Mild. Dept Trade and Industry grant licences to construct and operate Not open access	None post 1992 Order 636
Role of Government	Initially controlled all sales, now regulates access	Laissez faire	Initially fledged the industry by assuring cost recovery, later deregulated completely
Gas on Gas Competition	Good. JV members must market independently	Excellent. NBP Hub pricing Domgas, Import Pipes & LNG	Excellent. Henry Hub pricing DomGas, Import Pipes & LNG
Transparency	Excellent – regulated and transparent	Modest. 2004 Infrastructure Code of Practice, producers aid in capacity, rates, etc	Moderately so. Over capacity results in mid-stream players dealing
Barriers to entry	Few. Capital and regulated rates of return on facilities	ICOP helps. Declining supplies problematic	Low. Just need supply. Available capacity abundant

DomGas Alliance position

The Alliance supports the promotion of common-use mid-stream gas gathering and gas processing infrastructure to facilitate gas field development.

The Commonwealth and State Governments have a critical role in promoting common use gas supply infrastructure. This can be by:

- Recognising the impact that common user infrastructure can have on field viability when evaluating company submissions in respect to the issue or extension of Retention Leases
- Improving transparency and disclosure in the Retention Lease system to promote opportunities for gas field consolidation by potential developers
- Facilitating discussions between producers, infrastructure operators and gas users on opportunities for common use infrastructure

- Assisting with land access and approvals required to facilitate the development of common user facilities
- Improving competitive outcomes by requiring independent marketing by Joint Venture partners – as in the case of Norway
- Continuing to reinforce the obligations of producers to meet the requirements of the domestic gas market

The DomGas Alliance

The DomGas Alliance was formed in 2006 in response to serious concerns about the continued availability and competitiveness of gas supply to the WA domestic market. The Alliance includes current and prospective gas users and gas infrastructure investors.

Members include: Alcoa of Australia, AlintaAGL, Synergy, Dampier Bunbury Pipeline, ERM Power/New Gen Power, Newmont Australia, Fortescue Metals Group, Windimurra Vanadium and Horizon Power.

Alliance members represent the majority of the State's domestic gas consumption and gas transmission capacity, including smaller industrial and household users of gas. The Alliance also represents a significant proportion of prospective demand for additional gas supplies.

